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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/073,101	02/12/2002	Ian B. Betty	BTW-029	3700

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EXAMINER

SUCHECKI, KRYSTYNA

ART UNIT PAPER NUMBER

2882

DATE MAILED: 09/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/073,101

Applicant(s)

BETTY ET AL.

Examiner

Krystyna Suchecki

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 13 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 13 and 14 provide for the use of mode stripping/removing, but, since the claims do not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.
3. Claims 10-12 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are between the semiconductor optical amplifier (SOA), the semiconductor optical amplifier's angled output and the imaging multimode interference device (MMI). The disclosure and claim lack an explanation or recitation of how the SOA can both have an output as an integral portion of the SOA and have the MMI interpose the SOA and its integral angled output. Similarly, the direct connection of an input to the SOA is not clearly shown or described as claimed. A description is given, however, for an angled input connected to an MMI, which is in turn connected to a SOA, which is connected to another MMI, which is then connected to an angled output. Further, no frame of reference is provided to give meaning to the

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“angle” referenced. Further, the object (Examiner assumes a SOA) having an “angled input” is missing in Claim 11, line 1.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 13 and 14 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 3-5, 9, and 13-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Ido (US 6,111,998).

8. Regarding Claim 1, Figure 9A of Ido teaches an integrated optical circuit comprising: an input waveguide (1), an imaging multimode interference device adapted to substantially remove

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all modes but a fundamental mode of an optical signal received from said input waveguide (2), and an optical power splitter structure (3) in optical communication with said imaging multimode interference device.

9. Regarding Claim 3, Figure 9A of Ido teaches the optical circuit of claim 1 wherein said imaging multimode interference device is a 1-to-1 device (2).

10. Regarding Claim 4, Ido teaches the optical circuit of claim 3 wherein said imaging multimode interference device has a structure designed to reduce optical backreflections (See explanations of Figures 2A and 2B).

11. Regarding Claim 5, Figure 9 of Ido teaches a device and therefore a method for suppressing propagating lateral waveguide field oscillations at the input of an optical power splitter structure (3) comprising fabricating an imaging multimode interference device (2) in optical communication with said optical power splitter structure.

12. Regarding Claim 9, Figure 9 of Ido teaches an integrated optical circuit comprising an imaging multimode interference device (2) in optical communication with an optical power splitting structure (3).

13. Regarding Claim 13, Ido teaches the use of an imaging multimode interference device as an optical mode stripper in an integrated optical circuit (Figure 9A).

14. Regarding Claim 14, Ido teaches the use of an imaging multimode interference device to substantially remove all modes but a fundamental mode of an optical signal received at an input to said multimode interference device (Column 2).

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15. Claims 1-2, 5-8 and 10-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Ito (US 2003/0021514).

16. Regarding Claims 1-2, Figure 23 of Ito teaches an integrated optical circuit comprising an input waveguide (attached to P2), an imaging multimode interference device (25) adapted to substantially remove all modes but a fundamental mode of an optical signal received from said input waveguide, and an optical power splitter structure (Items 21 and 22) in optical communication with said imaging multimode interference device wherein said multimode interference device includes a primary output (lower leg) in optical communication with said optical power splitter structure and a secondary output in optical communication with a dump port (P6).

17. Regarding Claim 5, Ito teaches a device and therefor a method for suppressing propagating lateral waveguide field oscillations at the input of an optical power splitter structure comprising fabricating an imaging multimode interference (Figure 23, item 25) device in optical communication with said optical power splitter structure (Figure 23, items 21, 22, 20).

18. Regarding Claim 6, Ito teaches the method of claim 5 wherein said multimode interference device includes a primary output (item 25, lower leg) in optical communication with said optical power splitter structure and a secondary output (item 25, upper leg) in optical communication with a dump port (P6) and said method further comprises receiving an error signal from said dump port and monitoring said error signal for a substantial change.

19. Regarding Claim 7, Ito teaches the method of claim 5 wherein said optical power splitter structure is a component of an interferometric modulator (Particulars of items 21, 22).

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20. Regarding Claim 8, Ito teaches the method of claim 7 wherein said interferometric modulator is a Mach-Zehnder modulator (Particulars of items 21,22).

21. Regarding Claims 10-12, Ito teaches an integrated optical circuit comprising: a semiconductor optical amplifier (31) having an angled output (appears to be 90 Degrees); and an imaging multimode interference device between said semiconductor optical amplifier and said angled output (26) and wherein said semiconductor optical amplifier further has an angled input (appears to be 90 Degrees) and said imaging multimode interference device is a first imaging multimode interference device and said integrated optical circuit further comprises a second imaging multimode interference device (27) between said semiconductor optical amplifier and said angled input.

22. Claim 15 is rejected under 35 U.S.C. 102(e) as being anticipated by Hamamoto (US 6,148,132).

23. Regarding Claim 15, Hamamoto teaches a semiconductor optical amplifier comprising an imaging multimode interference device adapted to substantially remove all modes but a fundamental mode of an optical signal received from an input waveguide, and an electrode in contact with said multimode interference device adapted to change the optical properties of said multimode interference device through application of an electrical signal (Columns 2-3).

24. Claim 16 is rejected under 35 U.S.C. 102(e) as being anticipated by Joyner (US 6,571,038).

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25. Regarding Claim 16, Joyner teaches an optical attenuator comprising: an input waveguide; an imaging multimode interference device adapted to substantially remove all modes but a fundamental mode of an optical signal received from said input waveguide, and an electrode adapted to apply a bias voltage to a surface of said imaging multimode interference device (Columns 2-3).


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krystyna Suchecki whose telephone number is (703) 305-5424. The examiner can normally be reached on M-F 8-6, with alternating Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on (703) 308-4858. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.

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EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER